

randomised to the VD or HD for 14 weeks. IL-6 was measured at baseline and 14 weeks. Sodium intake was assessed using 24-hour urinary collections. Intervention data were analysed using one-way ANCOVA.

**Results:** Thirty-nine and thirty-four subjects completed the VD and HD respectively. Sodium intake remained unchanged in the HD (mean change  $-0.04$  mmol/L; 95%CI:  $-18.4, 18.3$ ;  $p = 0.99$ ), while the VD saw a mean  $35.4$  mmol/L reduction (95%CI:  $20.5-50.3$ ;  $p < 0.001$ ) with the intervention. IL-6 decreased over time by  $1.47$  pg/mL (95%CI:  $1.21-1.78$ ;  $p < 0.001$ ) and  $1.35$  pg/mL (95%CI:  $1.15-1.59$ ;  $p < 0.001$ ) for the VD and HD respectively. However when diet groups were examined there was no association between sodium intake and IL-6 ( $p = 0.52$ ).

**Conclusions:** The inflammation status of individuals at risk of heart disease, as measured using IL-6, did change over time but the effect was not driven by sodium intake in this cohort.

**Funding source(s):** Meat and Livestock Australia.

#### EFFECTS OF INCREASED POTASSIUM AND SODIUM ON ENDOTHELIAL AND VASCULAR FUNCTION

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**Background/Aims:** Increased potassium intake has been related to improved endothelial function. High sodium intake is known to impair endothelial function. The effect of increasing potassium in the presence of high dietary sodium is not known. The aim was to determine the effect of increased potassium and increased sodium on postprandial endothelial function, as assessed by flow mediated dilatation (FMD).

**Methods:** Thirty nine healthy, normotensive volunteers (mean  $\pm$  SD age  $37 \pm 15$  years and BMI  $23.0 \pm 2.8$  kg/m<sup>2</sup>) received a meal with  $3.1$  mmol potassium and  $65$  mmol sodium (LKHNa), a meal with  $38$  mmol potassium and  $65$  mmol sodium (HKHNa) and a control meal (LKLNa) with  $5.5$  mmol sodium and  $3.1$  mmol potassium on three separate occasions in a randomized order. FMD, pulse wave velocity (PWV) and blood pressure (BP) were measured while participants were fasting and at 30, 60, 90 and 120 minutes after the meal. Repeated-measures ANOVA was used to assess the effects of the meal type on the dependent variables over time.

**Results:** The addition of potassium (HKHNa) significantly attenuated the post meal decrease in FMD when compared to the high sodium meal and control meals ( $p < 0.05$ ). FMD was significantly lower following the LKHNa meal when compared to the HKHNa meal at 30 minutes ( $p < 0.05$ ). There was no significant differences in PWV or BP between treatments.

**Conclusions:** The addition of potassium to a high sodium meal attenuates the post meal reduction in endothelial function as assessed by FMD. Increases in sodium and potassium do not affect PWV or BP in the postprandial state.

**Funding source(s):** The University of South Australia.

#### UPDATING AN EXISTING REVIEW

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**Background/Aims:** A systematic review is 'time-stamped' to the date of the literature search. A quantitative result (i.e. meta-analysis) might change when relevant new studies are published and the review is updated. We describe three ways of examining whether new data alter the conclusion of He *et al* (2013) that lowering sodium intake reduces blood pressure ( $-4.18$  mmHg, 95%CI:  $-5.18, -3.18$  random effects analysis).

**Methods:** One new paper was found when the literature search was replicated for the period December 2012 to August 2013. Its impact on the existing result was examined using: shorthand estimation, complete re-analysis and update by combining the previous overall effect with the additional result.

**Results:** The new study had a mean reduction in blood pressure larger ( $-12$  mmHg,  $p < 0.01$ ) than the existing meta-analysis result. Therefore, this could not reduce the size of the existing result. This might be a sufficient assessment in certain situations. Complete random effects re-analysis yielded  $-4.32$  mmHg (95%CI:  $-5.33, -3.31$ ). However combining the new results with the previous overall result yielded  $-7.45$  mmHg (95%CI:  $-15.01, 0.11$ ) or  $-4.37$  mmHg (95%CI:  $-5.36, -3.39$ ) in a random or fixed effects analysis respectively.

**Conclusions:** The variation in results seen would not be observed in all datasets. Short-cut methods can be useful in certain circumstances. Care needs to be taken when interpreting the results of any analysis.

**Funding source(s):** N/A.

#### Concurrent session 8: dietary composition and metabolic outcomes

##### SATURATED FAT INTAKE, STATIN THERAPY AND ATHEROSCLEROTIC VASCULAR DISEASE: A PROSPECTIVE COHORT STUDY

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**Background/Aims:** The relationship between saturated fat (SFA), statin therapy and atherosclerotic vascular disease (ASVD) remains uncertain, particularly in the elderly population. The aim of this study was to investigate the association of SFA intake, statin therapy and risk of ASVD death in a population of elderly women.

**Methods:** A prospective cohort study of 1,469 women living in Perth, Western Australia, mean age 75.2 (SD 2.7) years, had SFA intake assessed using a validated food frequency questionnaire. Statin use was determined from patient report verified by medical record data. Total ASVD deaths were retrieved from the Western Australian Data Linkage System. HR was tested using Cox regression analysis.

**Results:** At baseline mean (SD) SFA intake was  $25$  (11) g/day and  $268$  (18%) participants were taking statin medication. Over 10 years, 134 participants died from ASVD-related causes. In the highest compared with the lowest quartile of SFA intake, the risk of ASVD death was higher in the total cohort (HR =  $3.04$ ,  $p = 0.002$ ) and the statin non-user subset (HR =  $3.55$ ,  $p = 0.001$ ), but not in the statin user subset (HR =  $1.05$ ,  $p = 0.962$ ).

**Conclusions:** High SFA intake was associated with increased risk of 10-year ASVD death in elderly women. The risk was most evident in participants with SFA intake  $> 31$  g/day and not taking statin medication. These data support current practice to lower SFA intake in low risk individuals and to continue statin therapy in high risk individuals.

**Funding source(s):** Healthway and NHMRC.

##### DIETARY INTAKE AND BEHAVIOURS IN PEOPLE WITH SEVERE MENTAL ILLNESS ACROSS FOUR COUNTRIES: COMPARISON WITH A NORMATIVE SAMPLE

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**Background/Aims:** Physical health is inextricably linked with mental health; people with severe mental illness (SMI) have poor physical health, high mortality and cardiovascular diseases. We investigated dietary intake and behaviours in people with SMI and compared with a normative sample.

**Methods:** Demographic and health behaviour data were collected from 697 people with SMI (aged 17–69 years) in Germany ( $n = 387$ ), Middle East ( $n = 200$ ), London ( $n = 67$ ) and Australia ( $n = 43$ ). Data were analysed by one-sample *t*-tests with 666 people with substance abuse disorder ( $n = 224$ ), schizophrenia ( $n = 158$ ), mood disorders ( $n = 227$ ) and somatoform disorders ( $n = 63$ ). The General Health Behaviour Questionnaire investigated dietary intake of healthy food/drinks and 'traditional' (unhealthy) food, regularity of meals, snacking, eating out, emotional eating and knowledge regarding the impact of diet on health. The normative sample was derived from a German population ( $n = 495$ ).

**Results:** The whole sample had significantly lower intake of healthy food/drinks and higher intake of 'traditional' (unhealthy) food (both  $p < 0.001$ ); these remained consistent across the four subgroups. They reported higher snacking, less regular meals, eating out, eating more when

out/in social situations, higher emotional eating, and lower knowledge regarding the effect of diet on health (all  $p < 0.001$ ; consistent across subgroups).

**Conclusions:** Diet and nutrition education present an important target for primary care of people with SMI. Targeting at-risk populations also presents an opportunity for prevention. Although research has identified the contribution of individual nutrients to mental health, further research needs to elucidate the role of whole diet and nutrition and mental illness.

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#### MACRO AND MICRONUTRIENT DIFFERENCES OF AD—LIBITUM PALAEOETHIC VS AUSTRALIAN GUIDE TO HEALTHY EATING DIETS

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**Background/Aims:** To investigate the differences in the macronutrient composition between the palaeolithic and AGHE Diet.

**Methods:** Thirty nine healthy women (mean  $\pm$  SD age  $47 \pm 13$  years, BMI  $27 \pm 4$  kg/m<sup>2</sup>) were randomised to either the palaeolithic ( $n = 22$ ) or AGHE diet ( $n = 17$ ) for 4-weeks. A 3-day weighed food record (WFR) was collected pre- and post-intervention. WFR were analysed using Food-Works (AUSNUT2007, Xyris Software, QLD, 2012). Within group analysis was performed using paired  $t$ -tests, between group analysis was conducted using Mann-Whitney and independent  $t$ -tests.

**Results:** The palaeolithic group had a lower intake of carbohydrate ( $28 \pm 8\%$  vs  $41 \pm 9\%$  of energy,  $p < 0.05$ ), and higher intake of fat ( $40 \pm 10\%$  vs  $33 \pm 7\%$ ,  $p < 0.05$ ) and protein ( $27 \pm 7\%$  vs  $22 \pm 6\%$ ,  $p < 0.05$ ) compared to AGHE. Within group analyses showed reductions in saturated fat intake in both groups ( $p < 0.05$ ) but no change to dietary fibre or total sugars. Within the palaeolithic group, there were significant reductions in energy, thiamin, riboflavin, sodium and calcium and increases in vitamins C, E and  $\beta$ -carotene (all  $p < 0.05$ ).

**Conclusions:** Despite the reduction in carbohydrates due to the removal of whole grain cereals and dairy, fibre intake was not impacted in the palaeolithic group. However, significant reductions in B vitamins and calcium were seen. Further research to explore the health implications related to long-term palaeolithic dietary patterns are recommended.

**Funding source(s):** N/A.

#### LONG-TERM EFFECTS OF VERY LOW- AND HIGH-CARBOHYDRATE WEIGHT LOSS DIETS ON MOOD RESPONSE IN OBESE ADULTS WITH TYPE 2 DIABETES

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**Background/Aims:** Very low carbohydrate, high fat (LC) diets are used for T2DM management. Previous research has shown compared to a high carbohydrate, low fat (HC) diet, a LC diet have less favourable effects on mood state in obese patients without diabetes. However, effects in T2DM at heightened risk of mood disturbance and depression remain unknown. This study compared the effects of an energy-restricted LC diet and an isocaloric HC diet on mood state over 12-months.

**Methods:** Subjects ( $n = 115$ ; mean  $\pm$  SD age:  $58 \pm 7$  years; BMI:  $34.6 \pm 4.3$  kg/m<sup>2</sup>; HbA1c:  $7.3 \pm 1.1\%$ ) were randomly assigned to consume either a hypocaloric (~6-7 MJ), planned isocaloric LC or HC diet, combined with exercise (3 day/week) for 1-yr. Body weight and psychological mood state measured by validated questionnaires - Profile of Mood States (POMS), Beck Depression Inventory (BDI) and Spielberger State-Trait Anxiety Inventory (STAI) were assessed monthly. Data was analysed with mixed models.

**Results:** Overall weight loss was  $9.5 \pm 0.5$  kg; no difference between groups ( $p = 0.91$ ). Over the course of the study there were significant improvements in BDI and the POMS scores (total mood disturbance and 6

subscales (anger-hostility, confusion-bewilderment, depression-dejection, fatigue, vigor and tension-anxiety),  $p < 0.05$  for time, effect size: 14-43%. STAI remained largely unchanged ( $p = 0.08$  time). There was no diet effect on the responses for any of the outcomes ( $p = 0.22$  time  $\times$  diet).

**Conclusions:** Over 1 year both diets achieved substantial weight loss and similar improvements in mood state and affect. This suggests either an LC or HC diet when combined with exercise in a lifestyle modification program improve psychological wellbeing in T2DM.

**Funding source(s):** NHMRC.

#### RICE INTAKE IS INVERSELY RELATED TO CARDIOVASCULAR MORTALITY AMONG CHINESE ADULTS

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**Background/Aims:** Few studies have assessed the association between rice intake and mortality. The results from these studies are inconsistent. We assessed whether rice intake was associated with CVD mortality, cancer mortality and all-cause mortality in a Chinese population.

**Methods:** We prospectively studied 2,832 adults aged 20 years and above with a mean follow up of 10 years. Rice intake was assessed by 3-day weighed food record (WFR) in 2002. HRs and 95%CI were calculated by competing risks regression (CVD and cancer mortality) and Cox proportional hazards analysis (all-cause mortality). A meta-analysis on rice intake and CVD mortality was conducted.

**Results:** We documented 184 deaths (70 CVD deaths and 63 cancer deaths) during 27,741 person-years of follow-up. Rice intake was inversely associated with CVD mortality. HRs for CVD mortality across tertiles of rice intake was 1.00, 0.53 (95%CI: 0.25, 1.11), and 0.34 (95%CI: 0.13, 0.90),  $p$  for trend 0.019. No association between rice intake and all-cause mortality was found. There was a trend of increased risk of cancer mortality among those with high intake of rice. In the meta-analysis which included three prospective studies, a high rice intake tended to be associated with reduced CVD mortality with pooled RR of 0.91 (95%CI: 0.76, 1.11).

**Conclusions:** Rice intake was inversely related to CVD mortality. There was no association between rice intake and cancer- or all-cause mortality.

**Funding source(s):** N/A.

#### DIETARY PROTEIN AND THE METABOLIC SYNDROME: A RANDOMISED CONTROLLED TRIAL

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**Background/Aims:** The aim of this study was to investigate the effect of three diets controlled for saturated fat (SFA) and varying in type (animal vs. plant) and amount (18% vs. 27%) of dietary protein on metabolic syndrome (MetS) criteria.

**Methods:** Sixty-two overweight adults with MetS (age: 30 - 60 y; mean  $\pm$  SD BMI:  $34.8 \pm 0.5$  kg/m<sup>2</sup>) consumed a healthy American diet (HAD) for 2 weeks before being randomised to either a modified-DASH diet rich in plant protein (M-DASH: 18% protein, 2/3 plant sources,  $n = 21$ ); a modified-DASH diet rich in animal protein (BOLD, 19% protein, 2/3 animal sources,  $n = 20$ ); and a moderate protein diet (BOLD+: 27% protein, 2/3 animal sources,  $n = 21$ ). Diets were compared at three levels of energy balance: controlled weight maintenance (WM), controlled weight loss including exercise (WL), and free-living weight loss (FL). Differences in MetS criteria, cholesterol, insulin and adiposity at the end of each phase were tested using repeated measure ANCOVA (adjusted for age and sex).

**Results:** While no between groups differences were observed, there was a significant main effect of phase ( $p < 0.01$ ) for all endpoints except for insulin. After the WM phase, all groups had a MetS prevalence of 80-90%, which decreased significantly to 50-60% after WL and maintained through FL.